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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,277	12/18/2001	John J. Craig	107254	9131
25944	7590	08/04/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			SHARON, AYAL I	
			ART UNIT	PAPER NUMBER
			2123	

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/020,277

**Applicant(s)**

CRAIG ET AL.

**Examiner**

Ayal I. Sharon

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/18/01, 7/26/02.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Introduction***

1. Claims 1-20 of U.S. Application 10/020,277 filed on 12/18/2001 are presented for examination.

### ***Drawings***

2. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. The prior art used for these rejections is as follows:
5. Hoskins et al., U.S. Patent 5,696,955. (Henceforth referred to as "**Hoskins**").

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6. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

**7. Claims 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Hoskins.**

8. In regards to Claim 17, Hoskins teaches the following limitations:

17. A system for simulating, analyzing and/or designing an automated assembly system, comprising:

a discrete event simulator that simulates operation of the automated assembly system; and

(See Hoskins, especially: col.73, lines 33-61; col.99, line 15 to col.100, line 45)

a three-dimensional kinematic and dynamic simulator coupled with the discrete event simulator,

(See Hoskins, especially: col.2, lines 24-35; col.101, line 22 to col.102, line 8)

the kinematic and dynamic simulator generating timing data for the automated assembly system that is used by the discrete event simulator.

(See Hoskins, especially: col.2, lines 24-35; col.101, line 22 to col.102, line 8)

9. In regards to Claim 18, Hoskins teaches the following limitations:

18. A system for determining a costed-throughput of an automated assembly system, comprising:

a failure model based on both product tolerances and process tolerances;

(See Hoskins, especially: col.158, lines 28-45; Fig.64)

a kinematic and dynamic simulator;

(See Hoskins, especially: col.2, lines 24-35; col.101, line 22 to col.102, line 8)

a discrete event simulator; and

(See Hoskins, especially: col.73, lines 33-61; col.99, line 15 to col.100, line 45)

a financial model, wherein the failure model and the kinematic and dynamic simulator provide data to the discrete event simulator,

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(See Hoskins, especially: col.7, lines 45-55; col.8, lines 54-67; col.21, lines 35-42)

the discrete event simulator simulates operation of the automated assembly system to obtain a throughput and a yield for the automated assembly system, and

(See Hoskins, especially: col.73, lines 33-61; col.99, line 15 to col.100, line 45)

the financial model determines a cost of the automated assembly system based on the simulated operation and fundamental data of resources included in the automated assembly system.

(See Hoskins, especially: col.7, lines 45-55; col.8, lines 54-67; col.21, lines 35-42)

10. In regards to Claim 19, Hoskins teaches the following limitations:

19. The system of claim 18, wherein the financial model takes into account flexible automation and includes means for comparing flexible automation with at least one of manual assembly and fixed automation.

(See Hoskins, especially: col.7, lines 45-55; col.8, lines 54-67; col.21, lines 35-42)

11. In regards to Claim 20, Hoskins teaches the following limitations:

20. The system of claim 19, wherein the means for comparing uses changes in fundamental data of resources included in the automated assembly system and changes in process steps of the automated assembly system.

(See Hoskins, especially: col.7, lines 45-55; col.8, lines 54-67; col.21, lines 35-42)

### ***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. The prior art used for these rejections is as follows:

15. Moyne, U.S. Patent 5,469,361. (Henceforth referred to as "**Moyne**").

16. Koga et al., U.S. PG-PUB 2001/0027350 A1 (Henceforth referred to as "**Koga**").

17. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

**18. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moyne in view of Koga.**

19. In regards to Claim 1, Moyne teaches the following limitations:

1. A method for simulating, analyzing and/or designing an automated assembly system that includes a plurality of resources, comprising:
  - defining at least one cell from an automated assembly line;
  - associating an action table with each cell, the action table of a respective cell specifying all process steps that are executed in the respective cell;

(See Moyne, especially: Abstract; col.13, line 67 to col.14, line 15 and Fig.7, Item 74; col.23, lines 17-55 and col. 26, lines 10-30)

Moyne, on the other hand, does not expressly teach the following limitations:

calculating a duration, a success rate and a repair time for each process step using fundamental data of the plurality of resources; and  
associating the duration, the success rate and the repair time with each process step in each action table.

Koga, on the other hand, expressly teaches the use of an "action table" that "describes an action to be taken by an administrator based on information displayed on the data display device, for example, progress, quality report and failure analysis." (See Koga, paragraph [0055] and Fig.9, Items 36 and 37). Koga also teaches that the information displayed on the data display device includes date and time of entry and completion, failure info, and pass rate info (see Figs. 2A, 2B, 2C, 3, and 17). Examiner finds that these correspond to the claimed "duration" and "success rate". Koga also teaches the display of an alarm when there is a delay on a manufacturing line (See Fig.16, and paragraph [62]). Examiner finds that this delay alarm corresponds to exceeding a specified "repair time".

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Moyne with those of Koga, because Koga's teachings "... display[ing] a management action reference of a human being, thereby causing the human being to take a speedy management action based on the thus displayed manufacturing information." (See Koga, paragraph [0011]).

20. In regards to Claim 2, Moyne in view of Koga teach the following limitations:

2. The method of claim 1, wherein the calculating step comprises obtaining the fundamental data of the plurality of resources from a resource database.

(See Moyne, especially: Fig.2, Item 22; Fig.3, Item 45. See also Koga, especially: Fig.9, Item 32)

21. In regards to Claim 3, Moyne in view of Koga teach the following limitations:

3. The method of claim 1, further comprising using a discrete event simulator to process the duration, the success rate and the repair time in accordance with the action table of each cell.

(See Moyne, especially: col.2, lines 34-46. Examiner finds that since the controller is based on operator commands, it is based on discrete events and not continuous time.)

22. In regards to Claim 4, Moyne in view of Koga teach the following limitations:

4. The method of claim 1, wherein the fundamental data used in the step of calculating the duration for each process step is related to machine specifications.

(See Moyne, especially: col.2, lines 34-58; col.26, line 52 to col.27, line 8; and col.27, lines 31-47)

23. In regards to Claim 5, Moyne in view of Koga teach the following limitations:

5. The method of claim 1, wherein the fundamental data used in the step of calculating the duration for each process step is related to at least one human operator.

(See Koga, especially: paragraphs [0066] to [0070] and [0079] to [0080])

24. In regards to Claim 6, Moyne in view of Koga teach the following limitations:

6. The method of claim 1, wherein the fundamental data used in the step of calculating the repair time for each process step is related to at least one human operator.

(See Koga, especially: paragraphs [0066] to [0070] and [0079] to [0080])

25. In regards to Claim 7, Moyne in view of Koga teach the following limitations:

7. The method of claim 1, wherein the fundamental data used in the step of calculating the success rate for each process step is related to both product tolerances and process tolerances.



(See Koga, especially: Fig.17, "Permissible Occurrence Number of Failures" and "Occurrence Number of Failures")

26. In regards to Claim 8, Moyne in view of Koga teach the following limitations:

8. The method of claim 7, further comprising using a discrete event simulator to process the duration, the success rate and the repair time in accordance with the action table of each cell.

(See Moyne, especially: col.2, lines 34-46. Examiner finds that since the controller is based on operator commands, it is based on discrete events and not continuous time.)

27. In regards to Claim 9, Moyne in view of Koga teach the following limitations:

9. The method of claim 7, wherein the fundamental data used in the step of calculating the success rate for each process step further is related to equipment failure rates.

(See Koga, especially: Figs. 2A, 2B, 2C, 3, and 17).

28. In regards to Claim 10, Moyne in view of Koga teach the following limitations:

10. The method of claim 7, further comprising accounting for a stack-up of errors related to both product tolerances and process tolerances throughout the automated assembly line from an upstream cell to a downstream cell.

(See Koga, especially: Fig.16, and paragraph [0062], which teaches "... displaying a manufacturing line progress result for each line, a delay for each line, and a progress of entire lines and alarm, respectively, is provided on the display screen as shown in Fig.16 ...")

29. In regards to Claim 11, Moyne in view of Koga teach the following limitations:

11. The method of claim 7, further comprising modifying at least some of the fundamental data of the resources to provide comparison of changes to the automated assembly system.

(See Koga, especially: paragraph [0074])

30. In regards to Claim 12, Moyne in view of Koga teach the following limitations:

12. The method of claim 7, further comprising modifying at least one of the process steps to provide comparison of changes to the automated assembly system.

(See Koga, especially: paragraph [0074])

31. In regards to Claim 13, Moyne in view of Koga teach the following limitations:

13. The method of claim 1, further comprising calculating an overall throughput of the automated assembly system using the action table.

(See Koga, especially: Fig.16, and paragraph [0062], which teaches "... displaying a manufacturing line progress result for each line, a delay for each line, and a progress of entire lines and alarm, respectively, is provided on the display screen as shown in Fig.16 ...")

32. In regards to Claim 14, Moyne in view of Koga teach the following limitations:

14. The method of claim 1, further comprising associating at least one operator with the automated assembly system.

(See Koga, especially: paragraphs [0066] to [0070] and [0079] to [0080])

33. In regards to Claim 15, Moyne in view of Koga teach the following limitations:

15. The method of claim 14, further comprising using a discrete event simulator to process fundamental data related to the at least one operator.

(See Moyne, especially: col.2, lines 34-46. Examiner finds that since the controller is based on operator commands, it is based on discrete events and not continuous time.)

34. In regards to Claim 16, Moyne in view of Koga teach the following limitations:

16. The method of claim 15, further comprising dynamically scheduling the at least one operator using fundamental data related to the at least one operator and data from the discrete event simulator.

(See Koga, especially: paragraphs [0011] and [0074])

### ***Conclusion***

35. The Patel, V. et al reference on the PTO-892 does not qualify as prior art due to its date of publication. It has been cited as a reference due to its relevance.

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***Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached at (571) 272-3749.

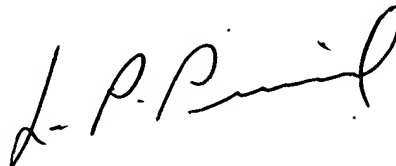
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.



Ayal I. Sharon

Art Unit 2123

August 1, 2005

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